

RESPONSE

Claims 1-29 were pending in the Application. Claims 1-12 and 15-29 were rejected, and claim 13 was objected to. Applicant respectfully thanks the Examiner for suggesting that objected claim 13 would be allowable if rewritten in independent form. The Applicant believes that amended independent claims 1, 19, and 24 are now in allowable form. The Applicant respectfully submits that amended independent claims 1, 19, and 24, as well as their dependent claims, are patentable over the cited references.

Claims Status

Claims 1-29 were pending in the Application. Claims 1-12 and 14-29 stand rejected. Claim 13 stands objected to, but would be allowable if rewritten in independent form. Claim 14 was cancelled previously, and claims 25-29 are cancelled by the present Amendment. Claims 1, 10, 12, 19, 23, and 24 are amended by the present Amendment. Support is found for these amendments in the specification and in claims as originally filed.

Independent claims 1, 19 and 24 are also amended to include "protocol checker logic configured to monitor the validity of bus transactions and to generate a device isolation control signal on a device isolation control line" or language equivalent thereto, as originally set forth in allowable claim 13.

Upon entry of the present Amendment and Response, claims 1-13 and 15-24 will be pending and are presented for reconsideration.

Rejections Under 35 U.S.C. § 102

Claims 1-9, 19-21 and 24-27 were rejected under 35 U.S.C. §102(a) as being unpatentable over U.S. Patent No. 5,170,029 to Kelley et al. ("Kelley").

Kelley

Kelley discloses systems and methods pertaining to "Voltage Overshoot Control in Hot Plug System." (Title.) Kelley's logic checks only for light voltage loads to limit voltage overshoots on the bus. Kelley's summary describes the patented invention as, "A method and implementing computer system configuration is provided in which PCI bus load conditions in a hot plug environment are detected and load devices are selectively connected to the PCI bus to

dampen lightly loaded systems and limit voltage overshoots on the PCI bus.” (Column 1, lines 55-59.) In defining the problem he is solving, Kelley states, “Typically, when the PCI slots are occupied with PCI devices, the circuit is sufficiently “loaded” such that voltage overshoot is not a significant problem. However, when a system set-up does not include a device in every slot, the system is considered to be lightly loaded and voltage overshoot problems become more apparent.” (Column 2, lines 57-62.) Furthermore, Kelley repeatedly discloses “voltage overshoot control circuitry” as central to his claimed invention.

By contrast, Applicant’s claimed invention relates to protocols on the bus, not just overall bus voltage or a voltage overshoot. For example, the detectable bus errors include those listed in Table 1 of the original application. In addition, the independent claims have been amended with language from allowed claim 13 to clarify this distinction. Amended claim 1 provides, in relevant part, “protocol checker logic configured to monitor the validity of bus transactions and to generate a device isolation control signal.” Independent claims 19 and 24 include similar language. From the text of the application, one may also see the distinction between the claimed protocol checker logic and the voltage overshoot detector disclosed by Kelley. As stated in the present application:

the protocol checker logic 46 is a state machine that tracks operation of the system bus 12. The protocol checker logic 46 checks all transactions on the bus for protocol violations. When the protocol checker logic 46 detects a protocol violation, the protocol checker logic 46 transmits the ISOLATE signal to the isolation control logic 36 initiating the isolation of the appropriate device 32 from the bus 12 as previously described. (Application, paragraph 33).

Furthermore, Kelley’s card removal is manual, and requires physical user intervention. In Kelley’s “hot plug environment”, “it is possible to remove or install PCI cards into PCI slots while the system is operational. This can be accomplished by quiescing, isolating and powering-down the adapter or card to be removed during a ‘hot plug’ procedure. The other adapters on the bus can continue operation since the slot with the adapter being removed is first isolated from the rest of the bus during the hot plug operation.” (Col. 3, line 66 – col. 4, line 7.) Kelley further states:

As illustrated in FIG. 5, during a hot plug sequence, an operator initiates the sequence by requesting at a keyboard that a specific adapter be hot plugged. Hot

plug software along with the device driver quiesces the adapter such that the adapter is not doing operations on the PCI bus. The hot plug controller 307 then isolates the PCI bus via a set of in-line load switches S(n) at slot "n". This is done by the hot plug controller 307 activating its REQ# line and the arbiter 304 and the arbiter 304 granting the PCI bus to the hot plug controller 307. The hot plug controller monitors the bus for an idle bus (i.e. when FRAME# and IRDY# are inactive), to assure that the previous master is off the bus. The hot plug controller 307 and the load control logic then change the state of the set of load control switches S(n) at the slot of the hot plug action. That action disconnects the slot and connects the dummy load. When the hot plug controller 307 releases its REQ# line, the arbiter 304 is free to arbitrate and grant the bus to another device. The adapter being hot plugged is now isolated and can be powered down and replaced. When the operator is ready to un-isolate the new card that was plugged in, the operator makes a request at the keyboard.

(Col. 5, lines 15-36, emphasis added.)

In contrast, Applicant's claimed invention is automatic and does not require manual user intervention. Furthermore, Applicant's claimed invention relates to the quick isolation of problematic devices without interrupting the ongoing operation of the system. Whether or not these devices are subsequently removed is not central to the independent claims.

Accordingly, for at least these reasons, Applicant respectfully submits that the amended independent claims are patentable over Kelley and traverse the Examiner's rejections.

Rejections Under 35 U.S.C. § 103

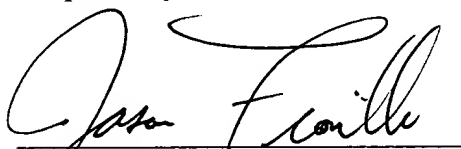
Claims 10-12 were rejected under 35 U.S.C. as being unpatentable over Kelly in view of U.S. Patent No. 6,708,283 to Nelvin et al. In addition, claims 15-18, 22, 23, 28 and 29 were rejected under 35 U.S.C. as being unpatentable over Kelly in view of U.S. Patent No. 6,453,429 to Sadana et. al.

Applicant respectfully submits that, for at least the reasons set forth above for independent claims 1, 19 and 24, as amended, are patentable over Kelley. As described above with respect to Kelley, neither Nelvin nor Sadana, alone or in combination, teach or suggest claims as currently amended. In addition, the dependent claims are patentable because they depend on a patentable base claim. These dependent claims may also include other features not taught or suggested by the cited references.

CONCLUSION

The Applicant respectfully thanks the Examiner for speaking with the Applicant's attorney over the past few weeks. The Applicant also respectfully requests that the Examiner reconsider the application and claims in light of the foregoing Amendment and Response, and respectfully submits that the claims are in condition for allowance. If, in the Examiner's opinion, a telephonic interview would expedite the favorable prosecution of the present application, the undersigned attorney would welcome the opportunity to discuss any outstanding issues, and to work with the Examiner toward placing the application in condition for allowance.

Respectfully submitted,



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